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A NEW SPECIES OF *RHEUMATOBATES* BERGROTH FROM ECUADOR AND DISTRIBUTION OF THE GENUS (HETEROPTERA: GERRIDAE)

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Abstract.—***Rheumatobates peculiaris***, n. sp., is described from Ecuador and compared to other species of the genus; distinctive characters are illustrated by line drawings. Additional distributional data, mainly from Mexico and Mesoamerica, are given for other species of the genus.

Key Words: Heteroptera, Gerridae, New World, *Rheumatobates peculiaris* n. sp. distribution

Spangler, Froeschner, and Polhemus (1985) provided a checklist of the species and subspecies of *Rheumatobates* Bergroth, a euryhaline genus restricted to the New World. They recognized 30 species and 3 subspecies. Polhemus and Manzano (in press) add a new species from marine habitats in Colombia and Ecuador and report distributions of the marine species of the eastern tropical Pacific. In this paper we add another new species, *Rheumatobates peculiaris*, and report distributions of a number of species, based mainly on material in the Polhemus collection.

Rheumatobates peculiaris, NEW SPECIES
Figs. 1–5

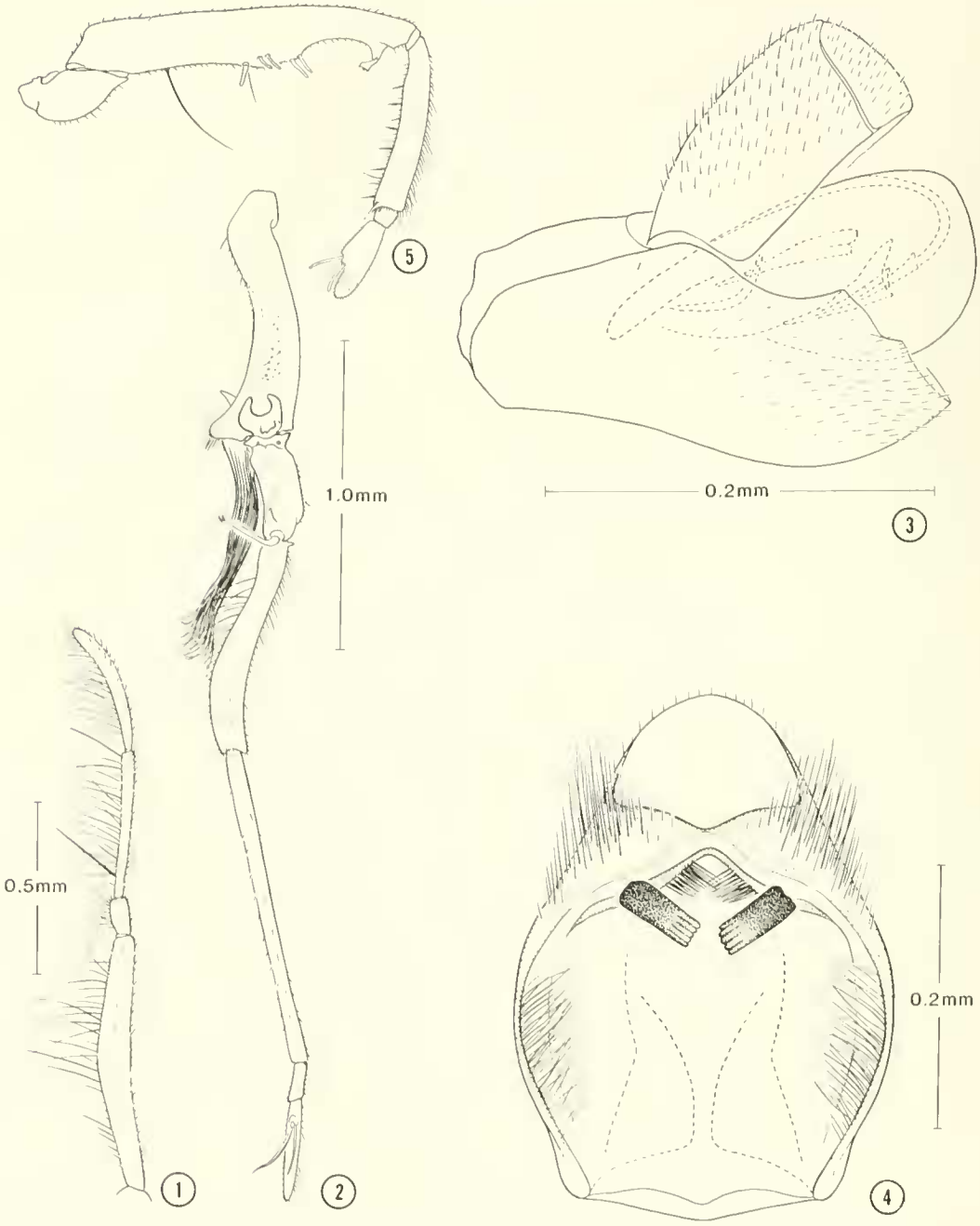
Material examined.—Holotype, apterous male; and apterous allotype: ECUADOR: LOS RIOS: Babahoyo (20 Km N.), 22 June 1975, A. Langley, J. Cohen and P. Monnig, Ecuador-Peace Corps-Smithsonian Institution Aquatic Insect Survey (USNM). Paratypes: Same data as holotype, 4 apterous males, 19 apterous females, 3 alate females, 35 nymphs (USNM, JTPC).

Etymology.—The name *peculiaris* (Latin) means strange, new and refers to the oddity of the male.

Distribution.—Ecuador.

Diagnosis.—*Rheumatobates peculiaris*, new species, vaguely resembles *Rheumatobates klagei* Schroeder but the shape of the male first antennal segment, shape and armature of the fore and hind legs, and male genitalia are unique and diagnostic. The very long, highly modified coxae separate this species from any other known species of the genus.

Description.—Length, apterous male, 2.4 mm; apterous female, 2.9 mm. Ground color of apterous male deep brown; anteromedial part of pronotum, broad ovate patch on mesonotum, entire sternum except basal abdominal segments, pleura, basal $\frac{4}{5}$ of antennal segment 1, basal $\frac{2}{3}$ of fore femur, coxae, most of abdominal segment VIII yellowish to leucine. Color of apterous female similar to male except with more extensive light markings as follows: antennal segment 1 and basal $\frac{2}{3}$ of segment 3, fore femur except distal $\frac{1}{10}$, fore tibia medially, mid and



Figs. 1–5. *Rheumatobates peculiaris* Polhemus and Spangler, new species. 1, Antenna. 2, Posterior leg. 3, Genital segments. 4, Abdominal ventrite IX. 5, Fore leg.

hind femora basally, abdominal tergites medially yellowish.

Antennae, fore legs, hind legs of male modified (Figs. 1, 2, 5). Antennal formula I–IV: male, 0.79 mm; 0.14 mm; 0.47 mm; 0.40 mm; female, 0.40 mm; 0.11 mm; 0.40 mm; 0.36 mm. Male antennae with stiff setae and bristles (Fig. 1); segment I slightly

bowed, widest medially, with stiff setae directed mostly laterally; segments II and III straight, with various bristles and setae directed mainly ventrally but at various angles; segment IV curved, with short ventrally directed setae.

Head of male short (0.47 mm), broad (0.54 mm across antennal tubercles); equally short (0.47 mm) but narrower (0.47 mm) in female; with two long curved ocular setae. Male genital segments strongly modified; genital segment II strongly excavate beneath, with 2 (1 + 1) anteromedially directed structures apparently composed of stiff setae (Figs. 3, 4). Connexiva of male narrow; broader and flatter in female. Male fore femur modified, irregularly set with spines and bristles along posterior margin; fore tibia set with stout setae (Fig. 5). Female fore femur set with slender setae beneath; fore tibia with three long setae, two stout and one slender, and many short appressed setae. Male middle femur set along entire length with semirecumbent spines on inner side and medium length decumbent setae along outer side, with a dorsal row of about 17 long decumbent setae on distal third. Male hind coxae very long (0.68 mm), subequal to hind femur (0.76 mm), carinate dorsally, excavate laterally, strongly modified with a distal brush of posteriorly directed setae (Fig. 2); trochanter long (0.18 mm), with a medially directed spine-like process composed of stiff setae (Fig. 2). Female middle and hind femora unarmed. Male and female fore claws long, slender, similar.

Length (in mm) of legs of allotype:

	Femur	*Tibia*	*Tarsal 1*	*Tarsal 2*
Anterior	0.79	0.47	0.07	0.22
Middle	2.23	2.23	1.15	0.43
Posterior	1.29	1.01	0.181	0.32

Habitat.—The habitat of this species is unknown.

Distribution.—The following distributional notes were derived mainly from data with specimens in the Polhemus collection (JTPC). The CL numbers refer to detailed ecological notes made by JTP and coworkers during 25 years of collecting in Mexico and Mesoamerica. The bound journals are in the Polhemus library. Abbreviations are given only for collections other than JTPC. The names of collectors D. A., J. T., and M. S. Polhemus are abbreviated DAP, JTP, and MSP respectively. Major additions to the distributions given by Spangler, Froeschner, and Polhemus (1985) are preceded by an asterisk. Two papers not cited in the checklist by Spangler, Froeschner, and Polhemus (1985) provide additional distributional records; Drake and Hottes (1951) record *R. bonariensis* (Berg) from *Bolivia, *Paraguay, *Uruguay as well as those localities discussed below; Nieser (1970) recorded *R. crassifemur esakii* Schroeder (1931) from *Suriname, *R. klagei* Schroeder (1931) from *Peru, and *R. trinitatis* (China 1943), from *Suriname.

Rheumatobates bergrothi Meinert, 1895

This species was originally described from Grenada. Drake and Hottes (1951) list it also from *Panama and the Virgin Islands. Hungerford (1954) added Venezuela, and Spangler, Froeschner, and Polhemus (1985) listed El Salvador and Honduras without definite locality data. We have the following additional records from Mesoamerica.

EL SALVADOR: 13 mi. NW of Amatillo, CL 1259, 22 Dec. 1969, JTP.

HONDURAS: 16 mi. S. San Lorenzo, CL 1310, 9 Jan. 1970, JTP; 17 mi. E. of Jicaro Galan, CL 1311, 9 Jan. 1970, JTP.

*NICARAGUA: near Lake Nicaragua, CL 1308, 8 Jan. 1970, JTP.

PANAMA: San Carlos, CL 1290, 1 Jan. 1970, JTP; E. of Panama City, CL 1295, 2 Jan. 1970, JTP.

Rheumatobates citatus
Drake & Hottes, 1951

This species was originally described from the state of Oaxaca, Mexico, and is also list-

ed from the adjacent states of Chiapas and Guerrero (Hungerford 1954). All three of those localities are close to the Pacific coast, but we now have specimens from an inland locality in Morelos, dispelling any notion that this species is restricted to coastal habitats. We have the following records from Mexico and Mesoamerica.

*GUATEMALA: E. of Puerto San José, CL 1251, 20 Dec. 1969, JTP.

MEXICO: MORELOS: 20 mi. S. of Cuernavaca, CL 1047, 27 Apr. 1964, JTP & MSP; OAXACA: Tequisistlan, CL 1066, 30 Apr. 1964, JTP & MSP; E. of Tehuantepec, CL 1067, 30 Apr. 1964, JTP & MSP.

Rheumatobates clanis
Drake & Harris, 1932

Hussey (1955) reported this marine species as new for the United States, citing Herring's collections at Bayport, Florida, in November 1947. Herring (1958) later hypothesized that its presence there was the result of hurricane transport, and questioned whether breeding populations were established in the United States. In the Polhemus collection we have specimens collected at Pine Island (a few miles north of Bayport) by H. C. Chapman in November 1952, indicating a long term presence on the Florida west coast. In both March and August, 1988, D. A. Polhemus (personal communication) found a large and apparently well-established breeding population on brackish water near Everglades City, Florida, establishing this species as a permanent part of the fauna of the United States. We have the following records from the Caribbean and Mesoamerica.

GUATEMALA: Santo Tomas de Costilla (east coast), CL 1320, 11 Jan. 1970, JTP.

JAMAICA: St. James Greenwood, at beach, 14 Mar. 1970, C. E. Aarons; Trelawny, Martha Brae River, nr. Falmouth, 14 Mar. 1970, C. E. Aarons.

Rheumatobates crassifemur crassifemur
Esaki, 1926

The records from *Bolivia given by Hungerford (1954) were overlooked by Spangler, Froeschner, and Polhemus (1985).

Rheumatobates creaseri Hungerford, 1936

This species was originally described from a cenote in Yucatan, Mexico, and is additionally known from Guerrero (Hungerford 1954). We have records from both coasts of Mexico.

MEXICO: *NAYARIT: San Blas, lower reaches of a spring fed river, along mangroves, CL 1208, 3 June 1966, JTP; *VERACRUZ: Rio Blanco, La Tinaja, CL 504, 4 Jan. 1971, JTP & MSP.

Rheumatobates drakei Hungerford, 1954

There are specimens with the following data from Suriname and Peru in the Snow Entomological Museum that were apparently overlooked by Professor Hungerford when he described this species.

PERU: HUANUCO: Loc. Shapajilla Jungle, 630 m, No. 3837, 26 July 1938, F. Woytkowski (SEMC).

SURINAME: "Dutch Guiana," upper right Coppename River, 5e kamp, Sept. 1943, D. C. Geijskes (SEMC).

Rheumatobates hungerfordi Wiley, 1923

In Hungerford's (1954) monograph, he gives a Utah locality for this species as "Emery Co., Utah, Aug. 2, 1922, Mrs. Grace Olive Wiley." One of us (JTP) has collected on the Colorado River in Grand County, Utah, and the Green River in adjacent Emery County, Utah, without finding this species, and has long considered this record suspicious. In her paper describing this species Wiley (1923) gives the following data: "Holotype: apterous male, collected near Rock Island, Texas, Aug. 2, 1922 (Grace O. Wiley); in author's collection." In 1922, before air travel was common, it is

unlikely that she was in eastern Texas and Utah on the same day. Mrs. Wiley undoubtedly collected these specimens in Texas, perhaps at Cisco. There is a town of the same name in Grand County, Utah, near the Colorado River. The border between Emery and Grand counties in Utah is the Green River and it could be easy to misread the map and place Cisco in Emery County. The Colorado River (of Texas, not Utah) flows a few miles east of Rock Island, another confusing coincidence. Mrs. Wiley lists as paratypes specimens taken in June near Cisco, Texas (in Eastland County, about 250 miles north of Rock Island), but does not mention any from Utah collections. Utah should be removed from the United States distribution of this species. Although there are published records of *Rheumatobates* from Saskatchewan, Arizona, New Mexico, and much farther west in Mexico, as far as we can determine, the 100th meridian essentially marks the western boundary of distribution of *Rheumatobates* in the middle latitudes of the United States.

Rheumatobates hungerfordi is common in central and eastern Texas and along the east coast of Mexico, particularly in Veracruz, and ranges southward to Belize. It is less common in other southern parts of the United States states but ranges as far north as Missouri (Smith 1988). With his collections at Carlsbad, New Mexico (most likely the Pecos River), and El Paso, Texas, Drake extended the known distribution westward along the Rio Grande drainage (Drake and Harris 1937). Drake and Hottes (1951) list it from Arizona, but we have been unable to confirm that record. They also give localities in the eastern Mexican states of Puebla, San Luis Potosi, Tamaulipas, and Veracruz. In addition to many collections from Texas, we have the following records from Mexico and Mesoamerica.

BELIZE: Mountain Pine Ridge, Rio On, CL 644, 31 Dec. 1973, JTP.

MEXICO: *CHIAPAS: Montebello Lakes, CL 1083, 3 May 1964, JTP & MSP. *OAXACA: Valle Nacional, CL 506, 4 June 1971, JTP & MSP. VERACRUZ: Rio Blanco, La Tinaja, CL 504, 4 Jan. 1971, JTP & MSP; Rio Paso de Ovejos, CL 513, 6 Jan. 1971, JTP & MSP; N. of Nuatla, CL 518, 7 Jan. 1971, JTP & MSP; 17 mi. S. of Tuxpan, CL 521, 7 Jan. 1971, JTP & MSP; 5 mi. S. of V. Alatorre, CL 675, 8 Jan. 1974, JTP.

Rheumatobates imitator (Uhler, 1894)

Spangler, Froeschner, and Polhemus (1985) listed Martinique without specific locality data, which is: MARTINIQUE: Rivière Salée S. ditch, 12 July 1967, P. W. Hummelinck.

Rheumatobates mexicanus
Drake & Hottes, 1951

This species was originally described from the state of Guerrero, Mexico, with additional localities recorded in the states of Aguascalientes, Mexico D. F., Oaxaca, Puebla, San Luis Potosi, Tamaulipas, and Veracruz. This species is widespread and common in Mexico, and also occurs farther south. We have the following records.

*HONDURAS: 17 mi. E. of Jicaro Galan, CL 1311, 9 Jan. 1970, JTP.

MEXICO: *COLIMA: Melaque, CL 1226, 20 Nov. 1968, JTP; Santiago, CL 1227, 25 Nov. 1968, JTP; Cuyutlan, CL 1228, 26 Nov. 1968, JTP. GUERRERO: Ixtapa, CL 1892, 27 Jan. 1985, JTP; large lagoon N. of Pie de la Cuesta, CL 1046, 26 Apr. 1964, JTP & MSP. *JALISCO: Puerto Vallarta, CL 731, 4 June 1975, JTP; Tenacatita, CL 738, 10 June 1975, JTP. *NAYARIT: Santa Cruz, CL 728, 8 June 1975, JTP; San Blas, CL 1208 & CL 1209, 3 June 1966, JTP; 7 mi. NE of San Blas, CL 1025, 21 Apr. 1964, JTP & MSP. *SINALOA: Escuinapa, CL 1023, 21 Apr. 1964, JTP & MSP.

Rheumatobates minimus Drake, 1958

In addition to the type locality in Peru, we can add the following.

BRAZIL: Ponte Nova, 29 July 1967, R. L. Usinger; Nova Teutonia, Santa Catarina, May 1957, F. Plaumann.

Rheumatobates minutus minutus Hungerford, 1936

Hussey (1955) reported this species as new to the Untied States based on collections from Lakeland and the Big Pine Key in Florida. Herring (1958) considered its presence there to be the result of hurricane transport, and questioned whether breeding populations were established in the United States. In the Polhemus collection we have specimens taken in the month of November by H. C. Chapman at Christmas and Orlando, Florida. D. A. Polhemus (personal communication) has recently seen in March and August an established breeding population near Everglades City, so this species can be considered a permanent resident of Florida. It is common in Mexico and Mesoamerica from which we have the following records.

*BELIZE: Beaver Dam Cr., CL 629, 27 Dec. 1973, JTP; 10 mi. W. of Stann Creek, CL 639, 27 Dec. 1973, JTP.

COSTA RICA: 10 mi. S. of Palmar Sur, CL 1281, 28 Dec. 1969, JTP; S. of San Isidro del General, CL 1302A, 6 Jan. 1970, JTP.

*GUATEMALA: Peten, 3 mi. S. of Tikal, CL 653, 2 Jan. 1973, JTP.

MEXICO: *CAMPECHE: Edzna, Pond, CL 613, 15 Dec. 1973, JTP. *QUINTANA ROO: Tulum, CL 621, 20 Dec. 1973, JTP. *VERACRUZ: 16 mi. S. of La Tinaja, CL 505, 4 Jan. 1971, JTP & MSP; S. of Gutierrez Zamora, CL 519, 7 Jan. 1971, JTP & MSP; Papantla, CL 520, 7 Jan. 1971, JTP & MSP; S. of Loma Bonita, CL 1333, 15 Jan. 1970, JTP; N. of Nuatla, CL 518, 7 Jan. 1971, JTP & MSP.

Rheumatobates minutus flavidus Drake & Harris, 1942

The distribution of this subspecies abuts that of the nominal subspecies in Costa Rica, and we can find no isolating mechanisms. In the series from Nuatla, Veracruz, Mexico, and Tikal, Guatemala (see above), the males and winged specimens key to *minutus minutus* but the apterous females key to *minutus flavidus,* so we question the distinctness of these subspecies. There appears to be a gradation between the two forms in Mesoamerica. We have the following records.

COSTA RICA: San Vito de Java, CL 1284, 29 Dec. 1969, & CL 1286, 31 Dec. 1969, JTP.

*PANAMA: San Carlos, CL 1290, 1 Jan. 1970, JTP; Portobello, CL 1292, 1 Jan. 1970, JTP.

PERU: SAN MARTIN DEPT.: 8 km. ENE of Tarapota, 550 m, 9 Jan. 1974, R. T. Schuh (AMNH).

Rheumatobates petilus Drake & Hottes, 1951

This species was originally described from the state of Guerrero, Mexico, and is additionally known from the state of Campeche on the opposite coast (Hungerford 1954). We have specimens from a tidal estuary emptying into the Gulf of Mexico.

MEXICO: *TABASCO: near Paraiso, Estuary, CL 607, 12 Dec. 1973, JTP.

Rheumatobates spinosus Hungerford, 1954

This species was reported from Bolivia without specific locality data by Spangler, Froeschner, and Polhemus (1985). We have the following records.

BOLIVIA: Santa Cruz, 22 Oct. 1957, G. Pinckert (also in USNM: see Drake, 1958); Beni, Rio Itenez, opposite Costa Marques (Brazil), 4–6 Sept. 1964, Bousemann & Lussenhop (AMNH).

Rheumatobates vegatus
Drake & Harris, 1942

Rheumatobates vegatus was described from Cuba and has been reported additionally from Florida and Puerto Rico. It is common around mangroves in southern Florida. Herring (1949) listed it from three Florida localities and described it as a new species, *R. crinitus*, which is now synonymized with *R. vegatus*. JTP collected it at Coral Gables (Matheson Hammock Pk., CL 410, 4 Feb. 1968), where it was swarming beneath the mangroves. In March and August, 1988, D. A. Polhemus found it in large numbers on salt water around mangroves near Everglades City, Florida.

We found this species to be common in mangrove habitats in Belize. JTP took a series from a limestone rimmed lagoon along the Caribbean side of the Yucatan Peninsula where freshwater from huge springs mingled with the sea water.

*BELIZE: Cay Caulker, CL 624, 24 Dec. 1973, & CL 628, 28 Dec. 1973, JTP. STANN CREEK DISTR.: Twin Cays, West Bay, red mangrove tidal flats, 11 Nov. 1987, P. J. Spangler, R. A. Faitoute (USNM).

MEXICO: QUINTANA ROO: Xel-ho, CL 619, 20 Dec. 1973, JTP.

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